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Original Research Article

A Descriptive Cross-Sectional Study Determining the Association between Sleep Quality and Levels of Sadness, Stress, and Anxiety among Medical Undergraduates

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Abstract

Aim: To examine the correlation between sleep quality and levels of sadness, stress, and anxiety among medical students.

Material and Methods: Medical students in their second to last year participated in this cross-sectional research. Those who passed their first-year test and attended at least one year in medical school were included. The socio-demographic data was collected using surveys. Medical students' depression, anxiety, and stress were assessed using a validated DASS 21.

Results: According to the DASS-21 score, 21% exhibited depressive symptomatology (3% severe or very severe), 30% had anxiety symptoms (6% severe or extremely severe), and 33% had stress symptoms (5% severe or extremely severe). The non-parametric chi square test showed that females had a 28.48% greater likelihood of poor sleep quality than the control group, although the difference was not statistically significant ($p>0.05$). Other study variables, such as second-year MBBS students (35.00%), rental house residents (30%), students who take over 30 minutes to fall asleep (50.00%), students who go to bed after 2:00am (52.38%), and those who spend less time in bed (52.78%), were associated with poor sleep quality (p-value 0.05).

Conclusion: An increasing number of medical students are suffering from mental health issues, such as depression, anxiety, stress, and inadequate sleep. Family expectations, test pressure, a lengthy course, apprehension about entering the medical field, discontent with administration, and other similar factors are often cited as probable causes of this condition.

Key Word: sleep quality, stress, anxiety

Introduction

Students' emotional and mental health suffers, which in turn affects the quality of their sleep, due to the demanding nature of medical school. Poor sleep quality and elevated levels of stress, anxiety, and depression are common among medical students because of their demanding academic schedules, long study hours, and frequent exams. In order to support students' mental health and academic performance, it is crucial to understand the pattern of these issues across different years of medical training. [1]

Extensive research has linked medical students' poor sleep quality to a host of negative outcomes, such as impaired cognition, worse academic performance, and an increased risk of mental health disorders. Recent research by Li et al. [2] has shown that sleep disturbances are common among pre-med students, with noticeable differences between years of school. As they adjust to their new academic environment, first-year students frequently experience the "shock of the new"; in contrast, seniors deal with the stresses of clinical rotations and upcoming professional exams.

Sleep deprivation is a major contributor to the common mental health problems experienced by medical students, including depression, stress, and anxiety. Because of the two-way nature of the connection between sleep disorders and mental health issues, it stands to reason that treating one can have a beneficial effect on the other. [3] Studies have revealed that high levels of academic stress and anxiety are most evident during the preclinical years, whereas clinical years provide additional pressures linked to patient care and professional growth. [4]

Cross-sectional comparative research allows for the analysis of these factors throughout various phases

of medical school, offering insights into how sleep quality and mental health disorders change over time. This technique may identify key moments when pupils are most susceptible and influence the creation of specialised treatments. For instance, treatments aiming at increasing sleep hygiene and stress management may be especially useful for first-year students, while specific mental health care may be essential for those in their final years. [5-8]
A combination of academic advising and mental health services is essential for students' overall health, according to recent studies. Universities are increasingly realising the need for such comprehensive measures to boost the overall well-being of medical students. [9,10] This research intends to evaluate the patterns of sleep quality, depression, stress, and anxiety over various years of medical school, adding to the expanding body of information on the mental health difficulties experienced by medical students and influencing effective support measures.

Material and Methods

The department of Physiology, SKMCH, Muzaffarpur, Bihar, India, performed this one-year cross-sectional research on medical students in their second and third years, including the final year. First-year students were omitted from the research since they are supposed to adjust to the course.

Inclusion Criteria:

- Undergraduate medical students who provided written informed consent.
- The students who have passed their first-year exam and spent at least 1 year in medical education field.

Exclusion Criteria:

- Participants who were unable to provide information (not willing, mentally challenged).
- Medical students who could not be approached even after second attempt to fill up the questionnaire.
- The study participants who filled incomplete form as this is the validated questionnaire-based study using scoring system.

Methodology:

To gather socio-demographic data such gender, age, ethnicity/race, and current residence, 30-minute questionnaires were used. Medical students were assessed for depression, anxiety, and stress using a validated DASS 21. [8] This easy-to-use 21-item short scale assesses depression, anxiety, and stress. Medical students' subjective sleep quality was measured using the Pittsburgh Sleep Quality Index (PSQI). [9]

An instructional lesson preceded data collecting. The researcher described the study's relevance and requested students to sign the permission form and complete the questionnaire. Students' information was likewise protected. The verified questionnaire queried students about the last 10 days. Students who missed data collection were asked to fill out the questionnaire the following day.

Statistical Analysis

The data were entered in the Microsoft Excel and analysed with the help of the software named "Statistical Package for the Social Sciences (SPSS)" version 22.0.

Results

Out of 415 students enrolled in the medical course for their second to third/final year of graduation, 289 (or 69.63%) completed the questionnaire. Of these, 100 (34.72%) were from the second year, 92 (31.60%) from the first part of the third year, and 97 (33.68%) from the second part of the third year. According to the socio-demographic profile, every single student was between the ages of 18 and 25, with a substantial majority falling between the ages of 20 and 21 (44.29%). Females made up a somewhat larger percentage than men (47-92% vs. 52.43%). There were 289 students residing at the hostel at the moment, with the majority (81.31%) occupying that space. Of the 289 medical students surveyed, 76 (or 26.30%) mentioned having trouble sleeping.

Table 1: Age distribution of the students

Age	Number	Percentage
18 to 19	58	20.07
20 to 21	128	44.29
22 to 23	95	32.87
24 to 25	8	2.77

Table 2: Gender and Current academic year of the medical students

Year of study	Number	Percentage
Second year of MBBS	100	34.72
Third Year – part 1 of MBBS	92	31.94
Third Year – part 2 of MBBS	97	33.68
Gender		
Male	138	47.92
Female	151	52.43

With concern to the prevalence of depression, anxiety, and stress, as weighed by the DASS-21 score, 21% had depressive symptomatology (3% severe or extremely severe), 30% had anxiety symptoms (6% severe or extremely severe) and 33% had stress symptoms (5% severe or extremely severe).

Table 3: Association between various socio-demographic profile and quality of sleep

	Sleep Quality						
	Poor	**%**	**Good**	**%**	**Total**	**%**	**p value**
Male	33	23.91	105	76.09	138	100	> 0.05
Female	43	28.48	108	71.52	151	100	
Study Year:							
Second MBBS	35	35.00	65	65.00	100	100	
Third First	29	31.52	63	68.48	92	100	< 0.05
Third Final	12	12.37	85	87.63	97	100	
Living at:							
Hostel	60	25.53	175	74.47	235	100	
On Rent	3	30.00	7	70.00	10	100	> 0.05
With Family	13	29.55	31	70.45	44	100	
Usual Time to fall asleep:							
Within 30 min	53	21.81	190	78.19	243	100	< 0.05
> 30 min	23	50	23	50	46	100	
Usual time to get in bed:							
10 PM to 11 PM	4	22.22	14	77.78	18	100	
11 PM to 12 PM	25	17.86	115	82.14	140	100	< 0.05
12 PM to 01 AM	21	29.17	51	70.83	72	100	
01 AM to 02 AM	15	40.54	22	59.46	37	100	
After 02 AM	11	52.38	10	47.62	21	100	
Sleep Hours in Bed:							
4 to 6 Hrs	38	52.78	34	47.22	72	100	
7 to 8 Hrs	35	18.04	159	81.96	194	100	< 0.05
9 to 10 Hrs	11	47.83	12	52.17	23	100	

Females were more likely to have poor sleep quality (28.48%) than the counter study group, according to the non-parametric chi-square test; however, this finding was not statistically significant ($p>0.05$). In addition to this, other study variables included students in their second year of MBBS (35.00%), students living in rental houses (30.00%), students who take more than 30 minutes to fall asleep (50.00%), students whose usual bedtime is later than 2:00 am (52.38%), and students who spend less time in bed and are more likely to have poor sleep quality (52.78%), which was also associated with a statistically significant result (0.05).

Discussion

Getting enough sleep is essential for improving cognitive abilities, particularly memory retention. Students' academic performance, physical health, and mental clarity are all negatively impacted by inadequate nighttime sleep and the resulting drowsiness throughout the school day. Regarding this matter, 26.30 percent of the individuals who took part in the survey had a PSQI score below 5, suggesting that 24 percent of medical students had very poor sleep quality. [10] Based on the results of the validated DASS score questionnaire, the research found that among medical students, 13% had moderate to severe depression, 10% anxiety, and 8% stress. The present research revealed a decreased prevalence of depression among medical students (21% vs. 51%) in Ethiopia. [11] Studies conducted in other regions of India found prevalence rates of 51% and 49.1%, respectively, thus this one is low as well. [11] Nevertheless, the present study's findings are consistent with those of Addis Ababa University (Ethiopia), which also revealed a prevalence of depression at 27.7 percent. [12]

The results showed that 38% of the population suffers from anxiety. Consistent with previous research in Ethiopia (30.1%)6 and Brazil (33.7%), the present investigation found a comparable prevalence. [13] However, compared to studies done in Nepal (5%), and India (9.8%) [14], the prevalence of anxiety in the most recent research was much greater. [15]

Stress levels among medical students were 38% high in this research. Despite how high it was, only a small number of studies found even greater levels of stress among pre-med students (74% and 90%). [16,17]

Consistent with the research done in Saifai, Etawah (27%), the overall PSQI score reveals that 26% of the subjects were experiencing sleep disturbances. [18] These results are corroborated by other

research. [19,20] In contrast to a research in Loni, Maharashtra, which indicated that women had better sleep quality than men, this one revealed that both sexes had better sleep quality in equal proportions. [21] The present research found that 72% of medical students (24 out of 289) slept for fewer than 7 hours, which is lower than the 60% found in the Saifai, Etawah study.[18] A lower percentage of medical students (15.91%) than in the Saudi Arabian research (51.5%) reported sleeping for more than 30 minutes at a time. [22] Factors associated with poor sleep quality in this study included being female (28.48%), being in the second year of MBBS (35.00%), staying in a rental home (30.00%), spending more than 30 minutes in bed to fall asleep (50.00%), getting into bed after midnight (52.38%) and getting less than 7 hours of sleep (52.78%). Regrettably, the researchers conducting the present investigation could not locate any similar data for the aforementioned linked factors. Therefore, this information may be used as a benchmark for the future. students may have masked their condition or offered socially acceptable replies, the present research cannot exclude the underreporting of the conditions of depression, anxiety, and stress as well as poor sleep.

Conclusion

An increasing number of medical students are suffering from mental health issues, such as depression, anxiety, stress, and inadequate sleep. Expectations from family and friends, test anxiety, a lengthy and demanding curriculum, apprehension about entering the medical field, unhappiness with administration, and other similar factors are typical causes of this predicament. Complete concentration and mastery are required in this field. To identify other determinants and provide more support for the present results, similar studies should be conducted among medical students from other medical institutions.

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